

## ABSTRACT OF THE INVENTION

This invention relates to the creation of dictionary functions for the encoding of video signals using matching pursuit compression techniques. After an initial set of reference dictionary images is chosen, training video sequences are selected, and motion residuals are calculated. High energy portions of the residual images are extracted and stored when they match selection criteria with the reference dictionary. An energy threshold is used to limit the number of video signal “atoms” encoded for each frame, thus avoiding the encoding of noise. A new dictionary is then synthesized from the stored portions of the image residuals and the original reference dictionary. The process can then be repeated using the synthesized dictionary as the new reference dictionary. This achieves low bit rate signals with a higher signal-to-noise ratio than have been previously achieved.